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completely lost. In the soils, however, there is a larger proportion of calcium and potassium present than in the 'rotted' lavas. This increase is ascribed to the action of plants and animals.

In an article in the Ponza Islands Schneider[11] describes the geological relation of the rhyolites, the trachytes, the pitchstones and the tuffs of the first two named rocks occurring there. His conclusions are questioned by Sabatini.[12]

BOTANY.[13]

New Species of Fungi from Various Localities.—(Continued from p. 343.)—HYPOXYLON VERNICOSUM E. & E. On dead wood. Sent from Ohio by Mr. A. P. Morgan as *Hypoxylon marginatum* (Schw.).

Stroma flattish-pulvinate, 2–3 x 1 cm. and 3–4 mm. thick, black and varnished outside and the uneven surface pitted all over by the papilliform ostiola, surrounded by an annular depression as in *H. marginatum.* Perithecia cylindrical, extending down nearly to the bottom of the stroma and about ⅓ mm. diam. Asci cylindrical, 75–80 x 4μ, short stipitate, 8-spored. Sporidia oblong-elliptical, 6–7 x 3–3½μ. Differs from *H. marginatum* (Schw.) in its varnished stroma and cylindrical perithecia.

PEZIZA (HUMARIA) TRACHYDERMA E. & E. On decaying wood partly buried in the soil, Valentine, Nebraska, May, 1896 (Rev. J. M. Bates, No. 416).

Sessile, shallow cup-shaped, 2–4 mm. diam., carnose, thinning to the acute, spreading margin, wood color when fresh, the furfuraceo-verrucose exterior remaining so when dry, but the hymenium becoming nearly liver color. Margin spreading when fresh, narrowly involute when dry. Asci cylindrical, 200 x 12–14μ, truncate above. Paraphyses thickened at the lips. Sporidia uniseriate, oblong-elliptical hyaline, smooth, 14–18 x 10–12μ.

Resembles somewhat a diminutive *Peziza vesiculosa,* but more open and shallower.

PHIALEA ARENICOLA E. & E. On sandy ground near "Blackbird Landing Bridge," Delaware, June, 1896 (Commons, No. 2784).

Stipitate, concave, becoming plane or even slightly convex, disk dull orange, 2–3 mm. broad, outside lighter, uneven, subpruiose. Stipe stout, 2–4 mm. long, substriate, gradually enlarged above, same color as the disk. Asci narrow, linear, straight, short-stipitate, 60–65 x 4μ, paraphysate, 8-spored. Sporidia sub-biseriate, oblong, hyaline, continuous, 6–8 x 1½μ.

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[11] Min. u. Petrog. Mitth., XVI, p. 65.

[12] Ib., p. 530.

[13] Edited by Prof. C. E. Bessey, University of Nebraska, Lincoln, Nebraska.

Differs from *P. epigaea* Karst. in its larger ascoma and much smaller sporidia.

TRICHOPEZIZA COARCTATA E. & E. On dead branches of *Vaccinium myrtilloides*, Mountains, Skamania Co., Wash., July, 1894 (Suksdorf, No. 507).

Scattered, superficial, sessile, hemispheric cup-shaped, smoky-white, 300–400μ diam., thin membranaceous, margin contracted quite strongly at first, so as to leave only a small, round opening, and fringed with short, fasciculate, smooth hairs about 25 or 30 x 2–2½μ. Asci clavate-oblong, 30–35 x 5–6μ. Sporidia biseriate, ovate, hyaline, 2-nucleate, 4–5½ x 2½–3μ.

Closely allied to *T. confusa* Sacc. (*T. punctiformis* Rehm.), but differs in its longer asci and different character of the hairs.

SCLERODERRIS ABIETINA E. & E. On bleached bark of fir trees, Newfoundland, September, 1896 (Waghorne, No. 61).

Erumpent-superficial, black, obconical, about ½ mm. diam., hymenium discoid or convex, areolate, with a very narrow, thin, almost obsolete margin. Asci clavate-oblong, sessile, rounded above, 70 x 15μ, 8-spored, overtopped by the filiform paraphyses. Sporidia fasciculate, clavate-cylindrical, multinucleate, becoming multiseptate, 50–65 x 3–4μ, hyaline.

HOLWAYA TILIACEA E. & E. On bark of dead *Tilia*, Canada (Macoun).

Ascomata gregarious or solitary, subcupulate, expanding to plane, thin (when dry), margin subundulate, 2–4 mm. across, black, with a short, thick stipe. Asci cylindrical, short-stipitate, 120–150 x 7–8μ. Paraphyses? Sporidia fasciculate or subbiseriate, narrow fusoid-cylindrical, nearly straight, multinucleate, hyaline, 40–62 x 3–3½μ.

Closely resembles outwardly *Bulgaria inquinans*. *Coryne ellisii* Berk. (*Stilbum magnum* Pk.) is found with this, and may be its conidial stage.

UROMYCES ROSICOLA E. & E. On leaves of *Rosa fendleri?* Crawford, Nebraska, June, 1896 (Rev. J. M. Bates, No. 438).

III. Sori hypophyllous, chestnut-brown, confluent over the entire lower face of the leaves, at first covered by the epidermis, soon naked. Spores globose or obovate, 20–35μ in the longer diam., epispore thick and coarsely tuberculose. Pedicels stout, about as long as the spores.

PUCCINIA SPHAERALCEAE E. & E. I and III. On *Sphaeralcea angustifolia,* Mesilla, New Mexico (Prof. T. D. A. Cockerell).

I. *Aecidium sphaeralceae* E. & E., Bull. Torr. Bot. Club, August, 1895, p. 364.

III. Sori hypophyllous, minute, arranged in a circle, 2–4 mm. across, confluent, at first covered by the epidermis and pale chestnut color, soon naked and dark chestnut color. Teleutospores elliptical or oblong-elliptical, 30–35 x 19–22μ, nearly hyaline at first, becoming pale brown, slightly constricted at the septum, mostly regularly rounded and only slightly thickened at the apex, mostly also rounded below but often slightly narrowed at the base; epispore smooth. Pedicels stout, persistent, reaching 150μ long, hyaline.

Differs from *P. malvacearum* Mont. in the presence of an *Aecidium,* in its smaller, more obtuse and comparatively shorter teleutospores.

AECIDIUM SCLEROTHECIOIDES E. & E. On leaves of *Senecio lugens*? Golden, Colorado, May, 1896 (E. Bethel, No. 5).

Pseudoperidia amphigenous, subepidermal, buried in the substance of the leaf in pale yellowish, slightly swollen orbicular spots 2–4 mm. diam., slightly prominent in pustules ½ mm. across, at first closed, then irregularly open at the apex revealing the mass of reddish-brown spores which are globose 20–27μ, ovate 20–27 x 15μ, or subangular from compression; epispore smooth or nearly so, rather thick.

Differs from *A. sclerothecium* Speg. in its smaller, inseparable pseudoperidia.

PHYLLOSTICTA HEUCHERAE E. & E. On leaves of *Heuchera cylindrica* near Lake Waha, Idaho, June, 1896 (A. A. & E. G. Heller, No. 3265).

Perithecia amphigenous, hemispherical, suberumpent, broadly perforated above, 110μ diam., crowded in orbicular patches, ½–1 cm. diam. Sporules abundant, cylindrical, hyaline, 5–6 x 1–1¼μ.

Probably the spermoginal stage of some dothideaceous fungus.

ASTEROMA IVAECOLUM E. & E. On stems of *Iva xanthiifolia,* Denver, Colorado, September, 1896, E. Bethel, No. 28).

Fibrils feather-like, appressed, radiating, forming dark brown spots 2–3 cm. across. Perithecia seated on and among the fibrils, depressed-hemispherical 110–130μ diam., perforated above. Sporules oblong, hyaline, 4–6 x 1½–2μ.

SPHAEROPSIS CELTIDIS E. & E. On dead limbs of *Celtis occidentalis,* Phillips Co., Kansas, 1896 (Bartholomew, No. 2348).

Perithecia gregarious or scattered, subseriate, about ⅓ mm. diam., covered by the epidermis which is slightly raised and barely pierced by the conic-tuberculiform ostiolum. Sporules oblong-elliptical, brown, 18–21 x 8–10μ.

SPHAEROPSIS PHLEI E. & E. On bulbous base of dead culms of *Phleum pratense,* Newfield, N. J., December, 1896.

Perithecia densely gregarious, erumpent-superficial, black, ovate, about ¼ mm. diam., with a papilliform or sometimes conical ostiolum. Sporules oblong-elliptical, brown, 18–22 x 7–10μ.

PHLYCTAENA ALBOCINCTA E. & E. On dead stems of *Rhus toxicodendron radicans,* Newfield, N. J., September, 1896.

Perithecia buried in the bark, 400–700μ diam., the short ostiolum barely perforating the epidermis. Sporules linear, curved, narrowed and curved above, 12–15 x 1–1½μ. A horizontal section shows the perithecia surrounded by a white ring.

SCHIZOTHYRELLA BOREALIS Ell. & Sacc. On dry, decorticated (beech)? wood, Potsdam, N. Y., June, 1896.

Perithecia superficial, scattered or subseriate, orbicular or elliptical, ⅓–½ mm. diam., ovate-globose, at first with a papilliform ostiolum, soon broadly open and cup-shaped, glabrous, black. Sporules cylindrical, hyaline, occasionally dichotomous, separating into segments 6–15 x 1½–2μ, 1–3 septate.

Differs from *S. australis* Speg. in the dehiscence of the perithecia (not laciniate) and the shorter narrower sporules.

CYLINDROSPORIUM SPIRAEICOLUM E. & E. On leaves of *Spiraea betulifolia,* near Lake Waha, Idaho, June, 1896 (A. A. & E. G. Heller, No. 3303).

Acervuli innate, on small, light yellow, irregularly shaped spots 1–2 mm. diam., few (1–7) on a spot. Conidia clavate-cylindrical, straight, rounded and obtuse above, gradually attenuated below, 3–5 septate, 40–70 x 3½–5μ, hyaline, erumpent above in orange-yellow masses.

Differs from *C. filipendulae* Thüm. in its epiphyllous acervuli and larger clavate conidia.

MARSONIA CALIFORNICA E. & E. On leaves of *Juglans californica,* Santa Monica, California, August, 1896 (Prof. A. J. McClatchie).

Spots amphigenous, angular, 1–3 mm. diam., subconfluent, ferruginous becoming grayish above, border narrow, slightly raised, dark. Acervuli innate, visible on both sides of the leaf. Conidia cylindrical, mostly straight, but sometimes slightly curved, hyaline, uniseptate, 20–27 x 3μ, obtusely rounded at the ends.

Differs from *M. juglandis* (Lib.) in its smaller, definite spots and cylindrical conidia.

ASTRODOCHIUM E. & E., nov. gen.

Sporodochia innate-superficial, formed by the transformation of brown, appressed, branched, radiating fibers. Conidia oblong, continuous, hyaline, borne singly and terminal on simple basidia.

ASTRODOCHIUM COLORADENSE E. & E. On fallen leaves of *Quercus undulata*, Morrison, Colo., December, 1896 (E. Bethel, No. 170).

Epiphyllous, forming round brown spots ½–1 cm. across and having the general aspect of *Asteroma*. The adnate fibers abundantly and sub-oppositely branched towards their extremities are soon transformed into round or elliptical, subdiscoid, light amber-colored sporodochia ¼–½ mm. diam. consisting of closely packed obclavate, 12 x 2½μ, hyaline basidia bearing at their tips the oblong hyaline, 4–6 x 1¼–1½μ, conidia.

Belongs in Fam. *Tubercularieae, Mucedineae.*

SEPEDONIUM TUBERCULIFERUM E. & E. Parasitic on *Peziza hemispherica* Wigg. and *P. fusicarpa* Ger., Nuttallburg, W. Va., July, 1896; alt. 1800 ft. (L. W. Nuttall, No. 883).

Hyphae effused, forming a thin, white layer on the surface of the hymenium, becoming pulverulent and yellowish at maturity; fertile hyphae with the ultimate divisions di-trichotomously or verticillately branched, the branches lanceolate, 20–30 x 2–2½μ, bearing at their extremities the globose conidia 15–18μ diam., bearing at symmetrical distances on their periphery 8–10 depressed globose, hyaline smooth tubercles 6–7μ diam. and sometimes separable from the central spore.

TORULA ERUMPENS E. & E. On decorticated, weather-beaten wood (poplar)? Morrison, Colo., December, 1896 (E. Bethel, No. 166).

Erumpent in flat, discoid, orbicular or elliptical tufts ½–¾ mm. diam. Conidia cylindrical, 2–5 septate, concatenate, 10–20 x 3½–4μ, dark brown, nearly opaque.

MACROSPORIUM FICI Ell. & Kelsey. On leaves of *Ficus elastica*, Oberlin, Ohio, September, 1896 (Prof. F. D. Kelsey, No. 1076).

Hyphae amphigenous, very dark brown, fasciculate, septate and more or less constricted at the septa, 70–125 x 4–5μ forming olivaceous tufts as large as a small pin's head thickly scattered over the large (1–2 cm.), dirty white spots with a dull purplish-red border. Conidia club-shaped, 3–7 septate, with a more or less complete longitudinal septum, 40–50 x 10–16μ, with a pedicel 20–30μ long.

Quite different from *M. torulosum* Pass. on limbs of *Ficus*.

J. B. ELLIS AND B. M. EVERHART.

Botanical Notelets.—Dr. R. E. Call publishes, in the Journal of the Cincinnati Society of Natural History (March, 1897), an interesting note on the Flora of Mammoth Cave, Kentucky. The species observed are all fungi, as follows, viz.: *Coprinus micaceus, Fomes applanatus, Rhizomorpha molinaris, Microascus longirostris, Zasmidium cellare, Mucor mucedo, Gymnoascus setosus, Sporotrichum flavissimum, Laboulbenia subterranea, Coemansia* sp., *Papulospora* sp., *Bouderia* sp. and *Peziza* sp.

The Annual Report of the State Botanist of the State of New York, for 1894, just issued, is of more than usual interest, since it contains a comprehensive paper on the "Edible and Poisonous Fungi of New York," illustrated by 43 colored plates. Included in the report is a paper by Dr. E. C. Howe on the "New York Species of Carex," in which one hundred and thirty-three species are described at length.

The Report of the Botanical Department of the New Jersey Experiment Station for the year 1896 indicates that Dr. Halsted has been very industrious in his studies of fungicides. The many half-tone reproductions of photographs add much to its value.

Mr. F. L. Stevens has reprinted from the Journal of the Columbus (Ohio) Horticultural Society (Vol. XI, No. 4) a convenient reference index to Dr. Halsted's bulletins and reports on plant diseases. It will be very serviceable to botanists and horticulturists. The same writer published, in the journal cited, an account of the parasitic fungi on Ohio Weeds. Some of these have proved very destructive to their hosts.

Ascherson's "Synopsis des Mitteleuropäischen Flora," of which parts 1 and 2 have been received, promises to be interesting and useful, but its use will be greatly lessened by the failure of the author to properly indicate the authority for each species. The sequence of families in these parts is as follows, viz.: *Hymenophyllaceae, Polypodiaceae, Osmundaceae, Ophioglossaceae, Salviniaceae, Marsiliaceae, Equisetaceae, Lycopodiaceae, Selaginaceae.*

Recent Changes in the Nomenclature of North American Trees.—In looking over the pages of Sudworth's "Nomenclature of the Arborescent Flora of the United States," the writer noted the following changes which are not yet generally found in manuals and lists of species, and which it may be well to reprint here for the benefit of those who do not have access to the most recent literature. It is not thought necessary to repeat the list of hickories (*Hicoria* spp. formerly *Carya* spp.), since the changes in nomenclature which they have undergone are now well-known to every tyro. Nor is it necessary to repeat *Toxylon* (*Maclura*), since it is eighty years since this name was proposed (1817). In the following list the name accepted by Sudworth appears first, while the name which is still commonly used in the manuals is placed within brackets.

Pinus radiata Don., Monterey Pine (*P. insignis* Dougl.).

Pinus attenuata Lemmon, Knobcone Pine (*P. tuberculata* Gordon).

Pinus virginiana Mill., Scrub Pine (*P. inops* Solander).

Pinus echinata Mill., Shortleaf Pine (*P. mitis* Michx.).

Pinus divaricata (Ait.) Gordon, Jack Pine (*P. banksiana* Lambert).

Picea canadensis (Mill.) B. S. P., White Spruce (*P. alba* Link.).

Pseudotsuga taxifolia (Poir.) Britton, Douglas Spruce (*P. douglasii* Link.).

Sequoia washingtoniana (Winsl.) Sudworth, Bigtree (*S. gigantea* Decaisne).

Chamaecyparis thyoides (L.) B. S. P., White Cedar (*C. sphaeroidea* Spach).

Chamaecyparis nootkatensis (Lamb.) Spach, Yellow Cedar (*C. nutkaensis* Spach).

Chamaecyparis lawsoniana (Murr.) Parl., Port Orford Cedar (*Cupressus lawsoniana* Murr.).

Tumion taxifolium (Arn.) Greene, Florida Torreya (*Torreya taxifolia* Arnott).

Tumion californicum (Torr.) Greene, California Torreya (*Torreya californica* Torr.).

Hicoria laciniosa (Michx. f.) Sargent, Shellbark Hickory (*H. sulcata* (Willd.) Britton.

Salix fluviatilis Nutt., Sandbar Willow (*S. longifolia* Muehl.).

Salix bebbiana Sargent, Bebb Willow (*S. rostrata* Rich.).

Populus deltoides Marsh., Cottonwood (*P. monilifera* Aiton).

Fagus latifolia (Muenchh.) Loudon, Beech (*F. ferruginea* Aiton).

Castanea dentata (Marsh.) Borkh., Chestnut (*C. vesca americana* Michx.).

Quercus minor (Marsh.) Sargent, Post Oak (*Q. obtusiloba* Michx.).

Quercus plantanoides (Lam.) Sudworth, Swamp White Oak (*Q. bicolor* Willd.).

Quercus virginiana Mill., Live Oak (*Q. virens* Aiton).

Quercus velutina Lam., Yellow Oak (*Q. tinctoria* Bartram).

Quercus digitata (Marsh.) Sudworth, Spanish Oak (*Q. falcata* Michx.).

Quercus pumila (Marsh.) Sudworth, Bear Oak (*Q. ilicifolia* Wang.).

Quercus marilandica Muenchh., Black Jack (*Q. nigra* Wang.).

Quercus nigra L., Water Oak (*Q. aquatica* Walter).

Quercus brevifolia (Lam.) Sargent, Blue Jack (*Q. cinerea* Michx.).

Ulmus pubescens Walter, Slippery Elm (*U. fulva* Michx.).

Sassafras sassafras (L.) Karst., Sassafras (*S. officinale* Nees.).

Gymnocladus dioicus (L.) Koch, Kentucky Coffee-tree (*G. canadensis* Lam.).

Cotinus cotinoides (Nutt.) Britton, American Smoke-tree (*Rhus cotinoides* (Nutt.) T. & G.

Rhus hirta (L.) Sudworth, Staghorn Sumach (*R. typhina* L.).

Rhus vernix L., Poison Sumach (*R. venenata* DC.).

Acer saccharum Marsh., Sugar Maple (*A. saccharinum* Wang.).

Acer saccharinum L., Silver Maple (*A. dasycarpum* Ehrhart).

Acer negundo L., Box Elder (*Negundo aceroides* Moench.).

Acer negundo californicum (T. & G.) Sargent, Californian Box Elder (*Negundo californicum* T. & G.).

Nyssa sylvatica Marsh., Black Gum (*N. multiflora* Wang.).

Nyssa ogeche Marsh., Sour Gum (*N. capitata* Walter).

Nyssa aquatica L. Tupelo Gum (*N. uniflora* Wang.).

Mohrodendron carolinum (L.) Britton, Silverbell-tree (*Halesia tetraptera* Ellis).

Mohrodendron dipterum (Ellis) Britton, Snowdrop-tree (*Halesia diptera* Ellis).

Fraxinus nigra Marsh., Black Ash (*F. sambucifolia* Lamarck.).

Fraxinus pennsylvanica Marsh., Red Ash (*F. pubescens* Lamarck.).

Fraxinus lanceolata Borkh., Green Ash (*F. viridis* Michx. f.).

Catalpa catalpa (L.) Karsten, Common Catalpa (*C. bignonioides* Walter).—Charles E. Bessey.

Note on Lysimachia nummularia L.—This plant is found escaped from cultivation near Decatur, Ill. It started from a cemetery, where it is cultivated, and now runs wild over an unused part of the cemetery, and for a distance of half a mile along a little stream running from it. The seeds float down and extend its habitat every year. When it once takes root it drives out all other vegetation except *Nepeta glechoma* and a few tall plants as *Lobelia syphilitica, Impatiens pallida*, etc. It spreads very rapidly, rooting at every node and forming long parallel stems, three to five feet long, making a matted growth. When not in flower it resembles, at a distance, *Nepeta glechoma.* It blooms from June to August. It is often called " wild myrtle."—Allan Gleason, *Secy. Agassiz Asso., Chapter 56.*

Another Popular Botany.—In a pretty little book by Mrs. Dana—" Plants and their Children "—we have an illustration of the mixture of fact and fancy which the children of the near future are destined to read and pore over in their "Nature Study." The author well says, in her preface: "A child's reading book, it seems to me, should secure for the child three things—practice in the art of reading, amusement and instruction." She has certainly secured the first and second of these objects, and not a little of the third. Had she taken counsel of some good botanist her book might have been more instructive and less misleading. Her description of the bean (on page 81) and her figure 88 are either absolutely incorrect, or, at the least, quite misleading. Similarly misleading is figure 119, the mistletoe (by which the author means the American mistletoe), for it illustrates not the American plant (*Phoradendron*) with which the child is supposed to be familiar, but the Europen (*Viscum*). Figure 136, which is said to show "a seed cut across, and so magnified that you can plainly see its many cells," is a reduced copy of a figure in plate 80 in Grew's Anatomy of Plants, published in 1682! We can not blame old Nehemiah Grew for making such an inaccurate drawing: we may rather give him some praise for doing so well when we consider his tools and environment, but certainly an author must be severely censured who, more than two hundred years later, reproduces it without saying a word as to its incorrectness.

While much of the text is good, some of it is as bad as the cuts we have mentioned. The plant physiology is sometimes ridiculous, often worse. The chapter on "How a Plant's Food is Cooked," is particularly bad. What can we say of a sentence like this: "When the watery broth [in the leaves] is cooked in the sun, the heat of the sun's rays causes the water to pass off through the little leaf-mouths!" Or of this: "There is a tree, called the *Eucalyptus*, whose leaves perspire so freely that it is planted in swampy places in order to drain away the water!"

Mrs. Dana writes so fluently that what she writes is likely to be read with pleasure, and it is her duty to attend much more carefully to her facts. This book must be revised before it can be commended as a reading book for children.—Charles E. Bessey.